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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,415	11/21/2001	Jae-Gyung Ahn	0630-1350P	9773

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EXAMINER

EVERHART, CARIDAD

ART UNIT PAPER NUMBER

2825

DATE MAILED: 07/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/989,415

Applicant(s)

AHN, JAE-GYUNG

Examiner

Caridad M. Everhart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/286,670.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/21/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Stolmeijer, et al. (US 5,877,066).

Stolmeijer et al disclose a semiconductor substrate shown in Fig. 7 with active regions 110 and 210 and trenches filled with oxide 50, and regions 82 and 83 as well as 81 and 84 correspond to dummy active regions (Fig. 7 and col. 4, lines 1-15).

Claims 1, 3, 5, 6, 8-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Ukeda, et al. (US 6,130,139).

Ukeda et al discloses dummy active regions (feature 9 Fig. 1b) and field isolation regions (features 8 Fig. 1b) and active field regions (feature 6 Fig. 1b). There is also shown in Fig. 1b gate oxide, gate electrode. In Fig. 7 it is shown that there is a second conductor over the gate insulation (col. 18, lines 16-25). There is a conduction film over the dummy areas also (Fig. 1b, feature 10) which is polysilicon. It is understood to be undoped, as there is no teaching of doping the layer. The conductive film is distinguished from the gate over the active region because it is shown in Fig. 7 that the gate over the active region can be of two layers, while dummy gate 10 is shown to be

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one layer. It is shown in Fig. 2f that the conduction layer may be doped with the same impurity as the active region. It is further taught that although it is shown in the figure that the dummy region is also simultaneously subjected to the formation of PN junctions, that this step does not necessarily have to include those regions(col. 13, lines 13-23), so that this is interpreted to encompass that the dummy conductive metal may be undoped polysilicon. That the dummy region can have a resistive polysilicon layer would also indicate that the polysilicon can be undoped (col. 15, lines 50-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ukeda et al as applied to claim 1 above and further in view of Ooka (US 4,740,480).

Ukeda et al is silent with respect to BPSG.

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Ooka is relied upon for its disclosure that BPSG is an improvement for isolation because of its low reflow temperature, which results in complete fill of trenches(col. 2, lines 32-45).

It would have been obvious to one of ordinary skill at the time of the invention to have used BPSG in the trench fill in the device taught by Ukeda et al in view of the teaching of the benefit taught by Ooka.

Claims 4,7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ukeda et al as applied to claim 1 above further in view of Yoh, et al (US 4,559,694).

Ukeda et al does not teach the doping of different type nor the salicide.

Yoh et al teaches the doping of different impurity in the gate and in the active layer(col. 26, lines 3-15; col. 25, lines 7-12 and 58-67; col. 26, lines 1-15 and claim 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have doped the layers as taught by Yoh et al in the device taught by Ukeda et al in order to obtain the benefits taught by Yoh et al such as the temperature dependency and the manufacturing deviations are made small(col. 25, lines 25-28).

With respect to the salicide, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a salicide in the device taught by Ukeda et al because Ukeda et al teach a bilayer of polysilicon and refractory metal as in the portions of Ukeda et al cited above, so that the salicide would have been obvious because a salicide step is conventional in the art in order to improve the conductivity of the polysilicon layer.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 571-272-1892. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C. Everhart
CARIDAD EVERHART
PATENT EXAMINER

C. Everhart
6-30-2004